

RESPONSE AND AMENDMENT

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I. REJECTION OF CLAIMS UNDER 35 U.S.C. § 112

The Examiner rejected claims 1-27 and 33-35 as being indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicant regards as the invention. The Applicant respectfully disagrees.

More specifically, the Examiner stated that, as to claims 1, 17, and 33, the phrase "pseudoranges that estimate the range of the GPS receiver" is indefinite. A "pseudorange", as known by those skilled in the art, is a distance measurement to a GPS satellite that has not been corrected for errors in absolute time of transmission of the GPS satellite signal. Thus, a pseudorange is not the true distance to a GPS satellite, but rather an estimated distance. See Newton's Telecom Dictionary, 18th Edition, 2002, page 596. See Applicant's specification, page 3, lines 6-35. As such, the phrase "pseudoranges that estimate the range of the GPS receiver to a plurality of GPS satellites", when read in light of the specification and the knowledge of those skilled in the art, reasonably defines the invention.

The Examiner further stated that the phrase "calculating position and time of a GPS receiver" in claim 1 is indefinite. Claims 17 and 33 contain similar language. In response, the Applicant has amended claims 1, 17, and 33 to more clearly define the invention. In particular, claim 1 has been amended to recite "calculating an absolute position of a GPS receiver and an absolute time of reception of satellite signals...." Claims 17 and 33 have been similarly amended. As such, the Applicant contends that claims 1, 17, and 33, when read in light of the specification and the knowledge of those skilled in the art, reasonably define the invention.

Claims 2-16, 18-27, and 34-35 were only rejected for depending upon rejected claims 1, 17, and 33. Therefore, the Applicant respectfully submits that claims 1-27 and 33-35, as they now stand, are definite and fully satisfy the provisions of 35 U.S.C. §112.

II. REJECTION OF CLAIMS UNDER 35 U.S.C. §102(e)

The Examiner rejected claims 1-35 as being separately anticipated by United States patent 6,133,874, issued October 17, 2000 to Krasner (hereinafter the '874



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patent), and United States patent 6,150,980, issued November 21, 2000 to Krasner (hereinafter the '980 patent). The rejections are respectfully traversed.

A. The '874 patent

More specifically, the Examiner alleged that the '874 patent "teaches the claimed method and structure for calculating position and time of a GPS receiver including: computing position of the receiving platform using pseudoranges, timing and ephemeris data." The Applicant respectfully disagrees.

The '874 patent teaches reducing the acquisition time of GPS satellite signals by using either an accurate time of day measurement, or a first pseudorange and an estimated time of day measurement. (See the '874 patent, col. 6, lines 31-43). The estimated time of day information is obtained "by reading the satellite data message from [a satellite] signal, or by having such data transmitted from an external source to the receiver. Alternatively, the receiver may have been maintaining a good estimate of the time of day using an elapsed time counter." (Col. 7, lines 55-63). The accurate time of day information is obtained from an auxiliary communication link from an outside source to the GPS receiver. (Col. 8, lines 49-65). This form of time determination technique that uses the satellite data to produce time information is exactly the type of time determination technique the present invention is intended to avoid. The present invention operates without any knowledge of time provided by satellite time data.

The Examiner's attention is directed to the fact that the '874 patent does not teach computing absolute time using pseudoranges, as recited in Applicant's independent claim 1. Specifically, Applicant's claim 1 positively recites:

"A method for calculating an absolute position of a GPS receiver an an absolute time of reception of satellite signals comprising:

 providing pseudoranges that estimate the range of the GPS receiver to a plurality of GPS satellites;

 providing an estimate of an absolute time of reception of a plurality of satellite signals;

 providing an estimate of a position of the GPS receiver;

 providing satellite ephemeris data;

computing absolute position and absolute time using said pseudoranges by updating said estimate of an absolute time and the estimate of position of the GPS receiver." (emphasis added).



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That is, Applicant's invention calculates absolute time using the pseudoranges to update an estimate of the absolute time. Applicant's invention can thus advantageously determine absolute time when the only measurements available are the pseudoranges (e.g., when satellite data indicating time-of-day is not available).

In contrast, the '874 patent does not teach computing absolute time using pseudoranges. Rather, the '874 patent teaches the converse: pseudoranges are determined using time-of-day information, which can be accurate or estimated. The time-of-day information is determined through satellite data, or clocks based on such satellite data. The '874 patent is devoid of any teaching or suggestion that pseudoranges from a plurality of GPS satellites can be used to compute absolute time, as recited in claim 1 of Applicant's invention. "Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim." Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 221 USPQ 481, 485 (Fed. Cir. 1984) (emphasis added). Therefore, the Applicant contends that claim 1 is patentable over the '874 patent and, as such, fully satisfies the requirements of 35 U.S.C. §102.

The Examiner's attention is further directed to the fact that the '874 patent is completely devoid of any teaching or suggestion of a method of calculating a position from partial pseudoranges that have an ambiguity in a number of integer milliseconds, as recited in Applicant's independent claim 28. Specifically, Applicant's claim 28 positively recites:

"A method of calculating a GPS position for a GPS receiver from partial pseudoranges that have ambiguity in a number of integer milliseconds, comprising:

- a) choosing an a-priori position of the GPS receiver;
- b) calculating integers conforming to said a-priori position;
- c) calculating a navigation solution;
- d) calculating a-posteriori residuals; and
- e) using a relative size of said a-posteriori residuals to determine if said calculated integers are correct; and
- f) repeating steps c), d) and e) using another a-priori position until residuals having a magnitude below a predefined threshold are computed. "

(emphasis added).



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The '874 patent fails to teach or suggest steps d), e), and f) of claim 28. In particular, the '874 patent does not teach calculating a-posteriori residuals in order to determine if the integers conforming to an a-priori position are correct. Further, the '874 patent does not teach repeating these steps for another a-priori position until the a-posterior residuals have a magnitude below a predefined threshold. Since the '874 patent does not teach all the limitations of claim 28, claim 28 is not anticipated by the '874 patent.

Claims 17 and 33 recite relevant limitations similar to that recited in claim 1 above. As such, claims 17 and 33 are also not anticipated by the '874 patent. Furthermore, claims 2-16, 18-27, 29-32, and 34-35 depend, either directly or indirectly, from claims 1, 17, 28, and 33, and recite additional features therefor. Since the '874 patent would not produce Applicant's invention as recited in claims 1, 17, 28, and 33, dependent claims 2-16, 18-27, 29-32, and 34-35 are also not anticipated and are allowable.

B. The '980 patent

More specifically, the Examiner alleged that the '980 patent "teaches the claimed method and structure for calculating position and time of a GPS receiver including: computing position of the receiving platform using pseudoranges, timing and ephemeris data." The Applicant respectfully disagrees.

The '980 patent teaches establishing GPS receiver timing by receiving a suitable signal containing a timing indicator over a communication link. (See the '980 patent, col. 4, lines 43-55). The timing signals are derived from the framing structure or timing data transmitted by commercially available telecommunications signals, such as cellular voice or data signals. (Col. 4, lines 56-61).

The Examiner's attention is directed to the fact that the '980 patent does not teach computing absolute time using pseudoranges, as recited in Applicant's independent claim 1. Rather, the '980 patent teaches receiving timing information from a communication system. This is in contrast with the Applicant's invention, which estimates an absolute time of reception, and then computes the absolute time using a



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plurality of pseudoranges. Since the '980 patent does not teach every limitation of claim 1, the '980 patent does not anticipate claim 1. Thus, the Applicant contends that claim 1 is patentable over the '980 patent and, as such, fully satisfies the requirements of 35 U.S.C. §102.

The Examiner's attention is further directed to the fact that the '980 patent is completely devoid of any teaching or suggestion of a method of calculating a position from partial pseudoranges that have an ambiguity in a number of integer milliseconds, as recited in Applicant's independent claim 28. Specifically, the '980 patent does not teach or even suggest any of steps d), e), and f) recited in claim 28. Thus, the Applicant contends that claim 28 is patentable over the '980 patent and, as such, fully satisfies the requirements of 35 U.S.C. §102.

Claims 17 and 33 recite relevant limitations similar to that recited in claim 1 above. As such, claims 17 and 33 are also not anticipated by the '980 patent. Furthermore, claims 2-16, 18-27, 29-32, and 34-35 depend, either directly or indirectly, from claims 1, 17, 28, and 33, and recite additional features therefor. Since the '980 patent would not produce Applicant's invention as recited in claims 1, 17, 28, and 33, dependent claims 2-16, 18-27, 29-32, and 34-35 are also not anticipated and are allowable.

III. REJECTION OF CLAIMS UNDER 35 U.S.C. §102(b)

The Examiner rejected claims 1-35 as being separately anticipated by the King patent (United States patent 5,893,044, issued April 6, 1999), and the Murphy patent (United States patent 5,763,960, issued April 7, 1998). The rejections are respectfully traversed.

A. The King patent

More specifically, the Examiner alleged that the King patent "teaches the claimed method and structure for calculating position and time of a GPS receiver including: computing position of the receiving platform using pseudoranges, timing and ephemeris data." The Applicant respectfully disagrees.



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King teaches receiving accurate GPS time at the receiver while the receiver is tracking satellites and position, and transferring the precise GPS time to a non-volatile memory coupled to a real-time clock. (See King, col. 5, lines 22-33).

The Examiner's attention is directed to the fact that King does not teach a method of calculating position and time of a GPS receiver, as recited in Applicant's independent claim 1. In particular, King does not teach the steps of providing an estimate of absolute time, providing an estimate of position, and computing an absolute position and absolute time using pseudoranges to a plurality of GPS satellites. Rather, King receives precise GPS time from the satellites, which is in direct contrast to Applicant's invention as recited in claim 1. Thus, the Applicant contends that claim 1 is patentable over the King patent and, as such, fully satisfies the requirements of 35 U.S.C. §102.

The Examiner's attention is further directed to the fact that the King patent is completely devoid of any teaching or suggestion of a method of calculating a position from partial pseudoranges that have an ambiguity in a number of integer milliseconds, as recited in Applicant's independent claim 28. Specifically, the King patent does not teach or even suggest any of steps a), b), d), e), and f) recited in claim 28. Thus, the Applicant contends that claim 28 is patentable over the King patent and, as such, fully satisfies the requirements of 35 U.S.C. §102.

Claims 17 and 33 recite relevant limitations similar to that recited in claim 1 above. As such, claims 17 and 33 are also not anticipated by the King patent. Furthermore, claims 2-16, 18-27, 29-32, and 34-35 depend, either directly or indirectly, from claims 1, 17, 28, and 33, and recite additional features therefor. Since the King patent would not produce Applicant's invention as recited in claims 1, 17, 28, and 33, dependent claims 2-16, 18-27, 29-32, and 34-35 are also not anticipated and are allowable.

B. The Murphy patent

More specifically, the Examiner alleged that the Murphy patent "teaches the claimed method and structure for calculating position and time of a GPS receiver



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including: computing position of the receiving platform using pseudoranges, timing and ephemeris data." The Applicant respectfully disagrees.

Murphy teaches determining GPS time from satellite information and transmitting an absolute time signal together with time-of-flight information to user stations at a fixed position. (See Murphy, Abstract; col. 3, lines 52-54). Once an atomic clock is set to the precise GPS time, the user is free to maneuver. (Col. 2, lines 60-65).

The Examiner's attention is directed to the fact that Murphy does not teach a method of calculating position and time of a GPS receiver, as recited in Applicant's independent claim 1. In particular, Murphy does not teach the steps of providing an estimate of absolute time, providing an estimate of absolute position, or computing an absolute position and absolute time using pseudoranges derived from a plurality of GPS satellites. Rather, Murphy teaches providing a precise GPS time derived from GPS satellites to an atomic clock, which is in direct contrast with Applicant's invention. Thus, the Applicant contends that claim 1 is patentable over the Murphy patent and, as such, fully satisfies the requirements of 35 U.S.C. §102.

The Examiner's attention is further directed to the fact that the Murphy patent is completely devoid of any teaching or suggestion of a method of calculating a position from partial pseudoranges that have an ambiguity in a number of integer milliseconds, as recited in Applicant's independent claim 28. Specifically, the Murphy patent does not teach or even suggest any of steps a), b), d), e), and f) recited in claim 28. Thus, the Applicant contends that claim 28 is patentable over the Murphy patent and, as such, fully satisfies the requirements of 35 U.S.C. §102.

Claims 17 and 33 recite relevant limitations similar to that recited in claim 1 above. As such, claims 17 and 33 are also not anticipated by the Murphy patent. Furthermore, claims 2-16, 18-27, 29-32, and 34-35 depend, either directly or indirectly, from claims 1, 17, 28, and 33, and recite additional features therefor. Since the Murphy patent would not produce Applicant's invention as recited in claims 1, 17, 28, and 33, dependent claims 2-16, 18-27, 29-32, and 34-35 are also not anticipated and are allowable.



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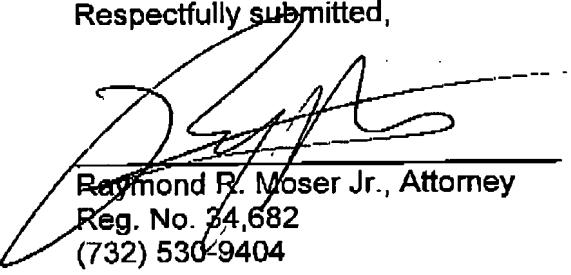
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CONCLUSION

Thus, the Applicant submits that none of the claims presently in the application are indefinite under the provisions of 35 U.S.C. § 112, or anticipated under the provisions of 35 U.S.C. § 102. Consequently, the Applicant believes that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner telephone Mr. Raymond R Moser Jr., Esq. at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,


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